The Thesis Committee for Meaghan Meredith Fowler
Certifies that this is the approved version of the following thesis:

Effects of Naturalistic and Peer Mediated Conversation Skills Training for Young Adults with ASD

APPROVED BY
SUPERVISING COMMITTEE:

Supervisor: Thomas Marquardt

Co Supervisor: Jessica Franco

Effects of Naturalistic and Peer Mediated Conversation Skills Training for Young Adults with ASD

by

Meaghan Meredith Fowler, B.S.

Thesis

Presented to the Faculty of the Graduate School of

The University of Texas at Austin

in Partial Fulfillment

of the Requirements

for the Degree of

Master of Arts

The University of Texas at Austin

May, 2015

Dedication

To the autism community, thank you for teaching me something new everyday, your gifts are simply immeasurable.

To moms, dads, siblings, caregivers and friends of individuals diagnosed with autism, may you all truly understand how special you are.

Acknowledgements

Dr. Franco, thank you for all of your advice, guidance, and encouragement. It has been an absolute pleasure to work with you and watch you change the lives of those you work with. Dr. Marquardt, thank you for bestowing upon me anecdotal stories filled with invaluable knowledge not only relating to our scope of practice but to this crazy thing we call life.

Family and friends, I would not be where I am today without your unfeigned support and love, thank you for always believing in me.

George, thank you for making me laugh each and everyday and for constantly reassuring me that graduate school would come to an end. I love sharing my life with you and cannot wait to start this new chapter of our lives together.

Abstract

Effects of Naturalistic and Peer Mediated Conversation Skills Training for Young Adults with ASD

Meaghan Meredith Fowler, M.A.

The University of Texas at Austin, 2015

Supervisors: Thomas Marquardt, Jessica Franco

Purpose: This pilot study sought to examine the efficacy of a naturalistic and peer-supported group language and social skills intervention program called Training for Adults in Language and Other Key Skills (TALKS). This group therapy is offered at the University of Texas at Austin Speech and Hearing Center each semester. The researcher hypothesized that individuals participating in the program would present with increased production of total utterances and decreased productions of off-topic comments and questions during conversations.

Methods: Two adult English-speaking males diagnosed with Autism Spectrum Disorder participated in weekly 10-minute Skype conversations both before and during participation in the group therapy. Each 10-minute Skype conversation was recorded and coded to determine ratio of utterances, total comment and off-topic comment production, and total question and off-topic question production. Each Skype video was double coded to ensure accuracy of the data.

Results: Participants presented with overall increases in total utterance production and ratio of total utterances across treatment phases. Data indicated a decrease in both off-

topic comment and question production for both participants. Both participants performed consistently in their overall question production across all treatment phases.

Conclusion: The Training for Adults in Language and Other Key Skills program had a positive effect on each of the participants' social language skills. Future research should include a larger number of participants and additional consecutive treatment phases.

Table of Contents

Figures

INTRODUCTION

Young adults diagnosed with Autism Spectrum Disorder (ASD) frequently present with social communication deficits that persist throughout their lifetime (McCurdy & Cole, 2014). However, social communication difficulties frequently are overlooked when prioritizing and determining necessary intervention. As young adults with ASD transition out of high school their ability to communicate socially will greatly impact their ability to gain greater independence, employment, and additional education. Support services for individuals diagnosed with ASD are greatly reduced following graduation from the public school system. Many young adults lose access to long time communication partners and aided forms of communication. Communication demands in a post graduation environment are often different than demands previously encountered in a classroom. Once support systems have been removed, even young adults with academic competence and adequate educational models can struggle to succeed.

EMPLOYMENT AND POST-SECONDARY EDUCATION

Collectively young adults diagnosed with ASD are significantly less likely than their age-matched peers to receive special education services to access opportunities related to employment, peer relationships, and postsecondary education following their departure from high school (Carter, Harvey, Taylor, & Gotham, 2013; Newman, Wagner, Cameto, & Knokey, 2009). It has been reported that following graduation, 74% of females and 66% of males immediately enroll in college (Carter et al., 2013; Aud, KewalRamani, & Frohlich, 2011). However, less than half of individuals diagnosed with ASD attend any kind of post-secondary educational programs (Carter et al., 2013; Chiang, Cheung, Hickson, Xiang & Tasi, 2012).

Research suggests that in Canada, the United States, and the United Kingdom individuals diagnosed with ASD are underemployed (Taylor & Seltzer, 2010). Taylor and Seltzer (2010) examined a subsample of young adults diagnosed with ASD, 74.2% of the participants also were diagnosed with an intellectual disability (ID). The investigators found that 6% of the participants were competitively employed working between 10 and 30 hours a week. The study found that 12% of individuals participated in supported employment which means they worked in the community with supports doing jobs like folding towels or rolling silverware into napkins. Over half or 56% of the young adults in this sample participated in adult day services that include sheltered workshops and day activity centers. Twelve percent of the participants in this study either participated in less than 10 hours a week of an activity or did not participate in any activities at all. Overall, the Taylor and Seltzer (2010) found that individuals who did not have a comorbid diagnosis of ID were three times as likely to have no activities compared to individuals with ASD who had a comorbid diagnosis of ID. The researchers infer that current service systems and vocational opportunities are not accommodating individuals who are not so severe that they require day programs but who cannot function independently. The data from this study suggested that the pattern of unemployment for individuals diagnosed with ASD has been consistent across multiple investigations including work performed (Ballaban-Gil et al., 1996). Taylor and Seltzer (2010) found 14% of participants were pursuing post-secondary degrees in programs at technical colleges, local four-year universities, or culinary schools. While the severity or presence of an intellectual disability undoubtedly influences an individuals' ability to successful transition from high school to employment and post-secondary educational opportunities it is imperative that a

wider range of services become available to suit the needs of young adults diagnosed with ASD.

SOCIAL WITHDRAWAL

Anderson, Maye, and Lord (2011) investigated changes in maladaptive behaviors in individuals diagnosed with ASD from mid-childhood to young adulthood. The researchers observed that the co-occurrence of puberty and increased social expectations of peers and other communication partners increased the likelihood and severity of social withdrawal in young adults diagnosed with ASD (Anderson et al. 2011). Data analysis from parental reports determined that a substantial portion of participants with ASD displayed an increase in social withdrawal as they developed from mid-childhood to young adulthood. The study inferred that as communication demands increase, young adults with ASD become socially disadvantaged relative to typical peers. That social disadvantage may in turn trigger the adolescent with ASD to further withdraw from participating in social communication. Overall, the investigators called for additional resources and support systems to aid adolescents and young adults with ASD with social skills to reduce the risk and prevalence of social withdrawal as they mature. Interventions need to focus on improving and strengthening young adults communication skills so they do not feel or appear socially disadvantaged and therefore withdraw from social situations.

Social participation serves as an indicator of quality of life (Orsmond, Shattuck, Cooper, Sterzing, Anderson, 2013). Orsmond et al. (2013) analyzed data based on participants in The National Longitudinal Transition Study-2 and found that approximately one-third of young adults diagnosed with ASD were socially isolated

(2013). The investigators looked specifically at rates of participation of young adults diagnosed with ASD compared to individuals diagnosed with disabilities including intellectual disability (ID), emotional disturbance (ED), and learning disabilities (LD). They found that individuals diagnosed with ASD experienced significantly more social isolation than individuals diagnosed with ID, ED, or LD. The data obtained from the sample used in the NLTS2 is representative of the United States population, which allowed the authors to generalize the results suggesting that social impairments negatively affect individuals diagnosed with ASD. The term socially isolated was defined as having no contact with friends, no phone calls, and no invitations to participate in activities outside of school. The researchers noted that social participation did not drastically change in early post-high school years regardless of environmental and contextual changes associated with the transition from high school to adulthood. Orsmond et al. (2013) reported that social isolation correlated with a reduced quality of life. The authors further suggested that during young adulthood, individuals with ASD are at a higher risk to develop depression and anxiety. Moreover, it is imperative that services are developed to aid young adults transitioning from high school to adulthood that focus on the improvement of social communication skills to increase social participation and improve overall quality of life.

PEER SUPPORT

The Individuals with Disabilities Education Improvement Act (IDEA 2004) dictates that individuals with disabilities must be included in typical classrooms to the greatest extent possible. Depending on the severity of the specific diagnosis, individuals may be removed if they do not receive a satisfactory education in the general education

classroom (IDEA 2004). There are several potential benefits associated with inclusion classrooms for individuals diagnosed with ASD (McCurdy & Cole, 2013). An inclusion classroom setting provides children diagnosed with ASD increased opportunities for social interaction, increased opportunities to form friendships with typical peers, and opportunities to participate in age-appropriate activities (McCurdy & Cole, 2013). Age matched typical peers provide direct models for children diagnosed with ASD and could potentially provide examples of skills that could aid in the social adjustment following the completion of high school. McCury and Cole (2013) examined the efficacy of peer lead interventions on targeted disruptive behaviors in a classroom environment. The study consisted of matching a school-aged child with autism to a typically developing age matched peer. McCury and Cole found that each school-aged child with ASD was able to reduce targeted off task or disruptive behaviors with the support of their assigned age-matched peer. While the study presented with several limitations, the overall findings indicated that age-matched peers can provide valuable and effective support to individuals with ASD in the classroom setting. However, no such study has been conducted on high school aged individuals diagnosed with ASD in a classroom setting.

GROUP THERAPY

Few studies have examined the implementation of group therapy for individuals diagnosed with ASD. Hillier, Fish, Cloppert, and Beversdorf (2007), reviewed and analyzed the efficacy of a socially and vocationally focused support group for young adults diagnosed with ASD. The sessions were directed by group members and emphasized a counseling support group model format for running group activities.

Overall, Hillieer, et al. found that the participants showed an overall increased ability to look at different perspectives and an overall awareness of others thoughts and feelings. Reports from both participants and family members suggested that the program had a positive impact on the participant's emotional state. The researchers suggested that more specific and clear cut modes of measuring data would be beneficial for future studies examining the efficacy of a socially and vocationally focused intervention group for young adults with ASD.

A modified version of a caregiver-assisted social skills intervention called the *UCLA PEERS for Adolescents Program* was modified in a randomized control trial for young adults in a small group format (Gantman, Kapp, Orenski, & Laugeson, 2011). The intervention focused on providing concrete rules and steps for a multitude of different social situations including handling peer pressure, the use of appropriate humor, dating etiquette, and peer entry and exit strategies (Gantman et al 2011). The program aimed to increase psychosocial functioning and promote the overall development of close relationships. The data yielded from caregiver reports indicated that there was an overall improvement in social skills, specifically social responsiveness, social assertiveness, cooperative social behavior with communication partners, and self-control. The investigators suggested that parent or caregiver assisted social skills intervention could greatly benefit young adults with ASD, especially due to the often increased dependence a young adult with ASD on the caregiver or parent.

Whyte, Nelson, and Khan (2013) utilized a community-based social skills summer program to determine the efficacy of an idiom intervention for a group of 10 school-aged children diagnosed with ASD. The program consisted of 3-hour sessions, 5 days a week for two weeks. Whyte et al. (2013) performed pre-test, immediate post-test, and delayed post-test analysis for comprehension of both learned and novel idioms in written in verbal form. During the intervention nine idioms were presented in paragraph form. The individuals teaching the social skills program focused on contextual clues when examining the idioms in paragraph form and then incorporated the idiom into interactive language challenges and highly engaging activities throughout each session. The investigators found that participants presented with increased idiom comprehension during daily immediate verbal post-testing during group intervention. Investigators also reported that three weeks post intervention participants demonstrated retention of idiom knowledge. Data suggested that the participants were able to better explain the meaning of learned idioms, but could not explain matched novel idioms (Whyte et al., 2013). While there was no apparent generalization, the researchers suggested that school aged individuals diagnosed with autism can effectively learn taught idioms in a group social skills setting.

SOCIAL COMMUNICATION GROUP

A common theme surrounding the transition of individuals diagnosed with ASD graduating from high school is the importance of social communication skills. Social communication skills can aid an individual in forming meaningful relationships and

social connections that can in turn prevent social withdrawal, increase an individual's quality of life, as well as provide additional meaningful opportunities for success in vocational and post-secondary academic fields. While there seems to be a consensus on the need for meaningful social communication interventions, there is limited research available on implementable, evidence-based therapy that addresses the multidimensional needs of young adults diagnosed with ASD.

The purpose of this study was to determine the effectiveness of a group therapy offered at The University of Texas at Austin Speech and Hearing Center called The Training for Adults in Language and other Key Skills (TALKS) program. The TALKS program utilizes Motivating and Interactive Planning Projects (MIPP) and peer mentors within a group setting to provide young adults with ASD communication opportunities during which they can receive meaningful intervention relating to individualized speech and language goals. The TALKS program targets the growth of social and communication skills needed for individuals diagnosed with ASD to succeed in their next phase of education, vocation, and independence. The following study will seek to determine the following questions:

1. What is the effect of the TALKS program on the participant's ability to equally contribute to a conversation?
2. What is the effect of the TALKS program on the participant's production of unrelated or off topic comments during a conversation?

3. What is the effect of the TALKS program on the participant's production of unrelated or off topic questions during a conversation?

The predicted finding is that the implementation of the TALKS program will result in a decrease in off-topic or unrelated comments and questions, and an overall increase in the participant's ability to equally contribute to a conversation.

METHODS

PARTICIPANTS

Participants were two English-speaking males ages 18 and 31. They are both referred to by a "code name" in order to protect the individuals' confidentiality. Participant one will be referred to as Jake and participant two will be referred to as Cole. Both participants had diagnoses of autism or autism spectrum disorder made by a medical physician and attended the Training for Adults Language and other Key Skills (TALKS) program at the UT Speech and Hearing Center.

Following the approval of the study and the consent and assent forms by the Institutional Review Board (IRB) at The University of Texas at Austin, participants of the Fall 2014 TALKS program at the University of Texas Speech and Hearing Center (UTSHC) were invited to participate. Participants were informed that this study was not a requirement to attend the TALKS program and participants were recruited for this study only after enrolling in the TALKS program. Over the course of two semesters, three participants enrolled in the study; however one participant opted to terminate their enrollment due to their lack of interest in using the Skype application.

Participants in this study were allowed to Skype from a location of their choice during their Skype sessions. However, both participants completed each Skype session while in their home. The author of the study, a graduate student in the Communication Sciences and Disorders master's program at The University of Texas at Austin, conducted the Skype sessions. For the duration of the description of the study, the author will be referred to as "the researcher." The researcher completed each Skype session on a secure computer in the UTSHC.

PROCEDURES

Two phases were included in this study to evaluate treatment effects. First, Skype sessions were conducted to obtain measurements on dependent variables before the initiation of the intervention. During the treatment phase, participants attended the TALKS program on a weekly basis for 8 weeks. Skype sessions were conducted on a once a week basis during both phases.

No treatment (no treatment). No treatment or pre-treatment Skype sessions were conducted to establish a measure of the participants' conversation skills while not participating in group intervention sessions. No treatment Skype sessions were conducted once a week for four weeks during a break in implementation of the TALKS program.

Intervention (treatment). The University of Texas at Austin Speech and Hearing Center (UTSHC) offers group intervention for young adults diagnosed with ASD called the Training for Adults in Language and other Key Skills (TALKS) program. Each treatment phase consists of weekly 2-hour sessions for approximately 8 weeks over the course of a semester. During each weekly session, participants receive direct intervention targeting speech and language goals. The TALKS program includes a combination of Motivating and Interactive Planning Projects (MIPPs) and peer mentors as primary interventions. Each 2-hour intervention session is comprised of scheduled activities that focus on a central theme and incorporate MIPPS around the university campus. Undergraduate students in the Communication Sciences and Disorders program at UT serve as peer mentors for each participant and together, each pair completes MIPPS and other scheduled activities under the direction of a graduate student clinician and a clinical

supervisor. Specific goals addressed during each intervention session may include; asking and answering questions to familiar and novel communication partners, sharing feelings, summarizing and reporting on recent events, and establishing and executing plans for accomplishing MIPPs. Each weekly session centers around a different theme based on participants preferences and include topics such as food, sports, science, movies, music, social media, and art. A typical agenda for a TALKS session includes the following activities and times:

5 minutes Meet and Greet:	Unstructured conversation with all group members
15 minutes Challenge Task:	Ask structured questions to novel people
60 minutes MIPP:	Theme-based projects that are fun and motivating
15 minutes Individual Reflection:	Practice conversation with peers
15 minutes Group Sharing	Present information to large group about preferences
5 minutes Preparation:	Introduce the next week's theme

Table 1: TALKS schedule and activities.

EXPIREMENTAL DESIGN

This study was designed to allow for the evaluation of the effects of the intervention provided by the TALKS program. This study utilized single subject experimental design. An alternating treatment design across participants was used to determine treatment effects. This design allows each individual to serve as his or her own control by comparing changes in dependent variables before and following the initiation of an independent variable (TALKS program). The study utilized an alternating treatment design across multiple participants. Initially, the study anticipated that most

participants' progress during the TALKS training would be experimentally validated using ABAB design, where A designated no treatment or no treatment and B indicated intervention via the TALKS program with in a 12 month period. However, due to timing conflicts, the researcher was only able to obtain data using BAB design with the first participant and data reflecting an AB design for the second participant. All no treatment and treatment Skype sessions lasted 7-12 minutes. The first participant, Jake, completed 6 Skype sessions over the course of attending the TALKS program in Fall 2014. Jakethen completed 4 no treatment Skype sessions during the winter break and 6 Skype sessions following the initiation of the TALKS intervention in spring 2015. In total, Jake completed 16 Skype sessions at the rate of one Skype session per week and over the course of the study participated in two 8-week sessions of the TALKS program. The second participant, Cole , completed 4 no treatment Skype sessions and 6 Skype sessions while participating in the TALKS program in the spring 2015. In total, Cole completed 10 Skype sessions at the rate of one Skype session per week and participated in one 8-week session of the TALKS program.

DATA COLLECTION AND ANALYSIS

Skype sessions were recorded for data collection purposes. All recordings were transferred to UT Box and placed in a secure, password protected folder. The researcher conducted and recorded all Skype sessions on a secure computer in the UT Speech and Hearing center at The University of Texas at Austin. Sessions were recorded using a Skype recorder program created by "ecamm." Files were marked with a code name for purposes of confidentiality. Undergraduate students who received CITI and HIPPA

training reviewed the video and coded each session on separate data sheets within the password protected file. The graduate researcher reviewed each video, correlated coded results and graphed the data. Videos were reviewed using Quick Time Player on a secure computer in the UT Speech and Hearing Center. A datasheet was created using an Excel spreadsheet for data recording (see appendix A).

RELIABILITY

Each Skype video recording was double coded to ensure inter-rater reliability. Inter-rater reliability was calculated to be 0.834.

RESULTS

This study examined the effects of a peer supported intervention program offered at the UTSHC on the pragmatic and social skills of young adults diagnosed with ASD. An alternating treatment design across participants was used to analyze changes in the participants' overall participation in conversation, production of off-topic comments, and production of off-topic questions both before and during the TALKS intervention. This chapter describes the outcomes of the study.

PRODUCTION OF TOTAL UTTERANCES

Research Question 1 examined the ratio of utterances produced by the participant compared to the researcher who served as the communication partner during each of the Skype sessions. The ratio was determined by dividing the total number of utterances produced by the participant by the total number of utterances produced by the researcher during each of the 10-minute Skype sessions. Total utterances were averaged across no treatment and treatment phases for both the participant and the researcher.

Average ratios were obtained for Jake across treatment and no treatment phases. During treatment phase 1 Jake produced an average ratio of 0.718, during his no treatment phase he produced an average ratio of 0.874, and during his second treatment phase he produced an average ratio of 0.888.

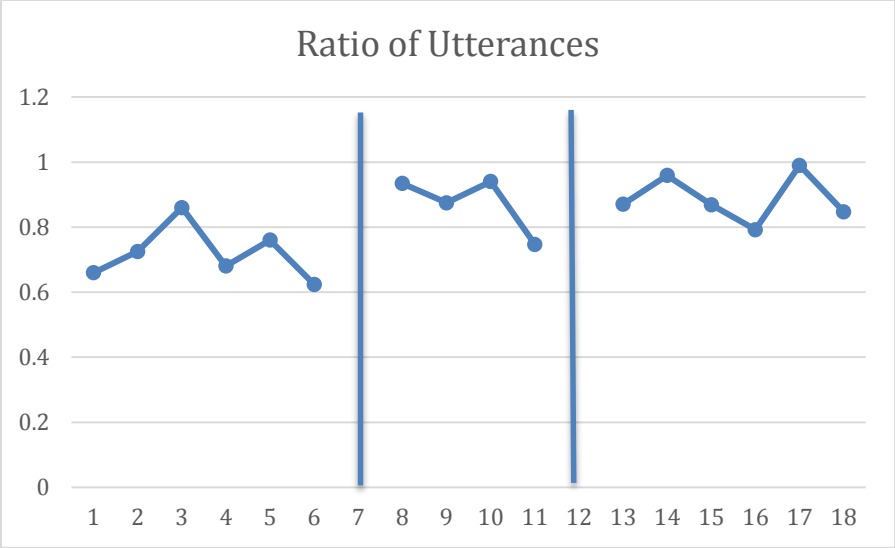

Figure 1: Ratio of utterances produced by researcher and Jake

During the first treatment phase Jake produced an average of 89 utterances per session and the researcher produced an average of 127 utterances per session. There was an average difference of 37.7 utterances between the researcher and the participant. During the no treatment phase Jake produced an average of 92 utterances per session while the researcher produced an average of 104.8 utterances per session. During the no treatment phase there was a mean difference of 12.5 utterances between the total number of utterances produced by the researcher compared to the participant. During the second treatment phase Jake produced an average of 106 utterances per session and the researcher produced an average of 120 utterances per session. The mean difference of utterances between the researcher and the participant during the second treatment phase was 14 utterances per session. Figure 3 shows the total utterances produced by both the participant and the researcher across each treatment phase.

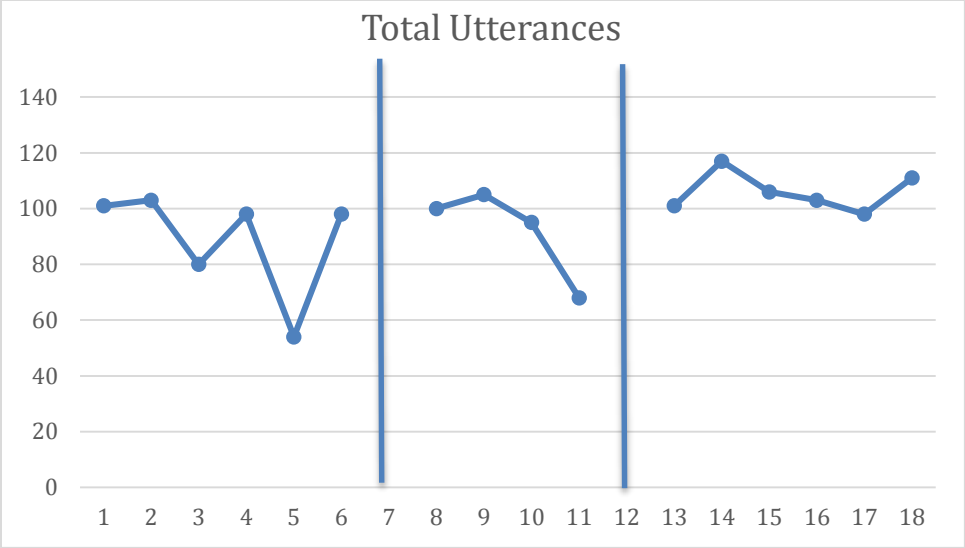

Figure 2: Total utterances produced by researcher and Jake

During the no treatment phase Cole produced an average of 71 total utterances while the researcher produced an average of 89 utterances per session. On average the researcher produced approximately 11.5 utterances more than the participant. During the treatment phase Cole produced a mean average of 89 total utterances per session while the researcher produced an average of 94.5 utterances per session. On average, the researcher produced 5.2 utterances more than the participant during each session.

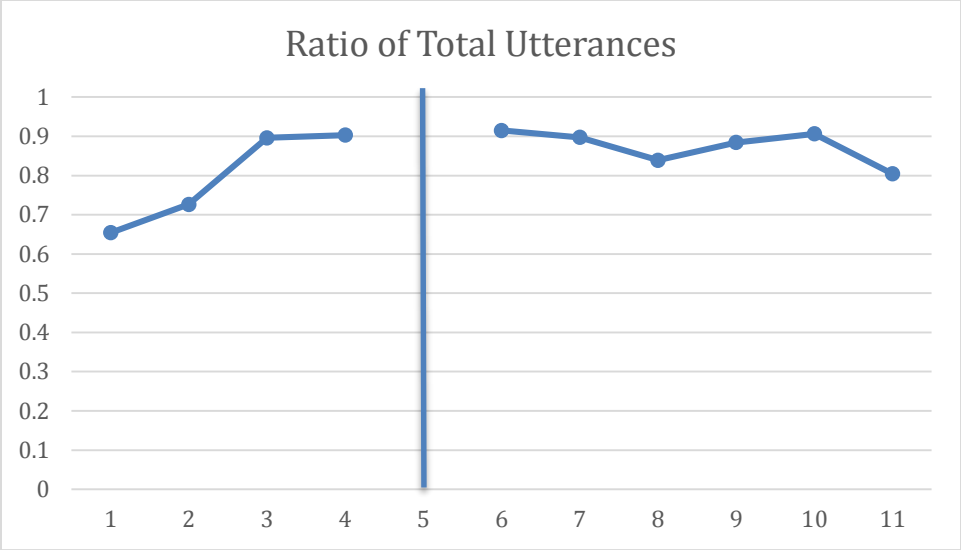

Figure 3: Ratio of utterances produced by researcher and Cole

When comparing average ratios across no treatment and treatment phases, Cole produced an average ration of 0.794 during his no treatment phase and an average ratio of 0.874 during the treatment phase.

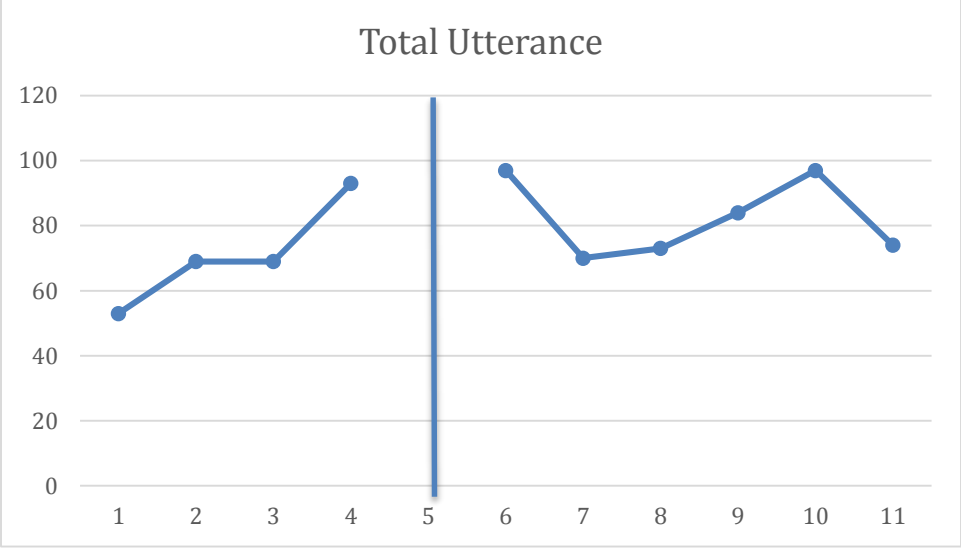

Figure 4: Total number of utterances produced by Cole

PRODUCTION OF OFF TOPIC COMMENTS

Research Question 2 examined the rate of off topic comments made during a 10 minute Skype conversation. During each Skype session both number or total comments and number of off-topic comments were coded and tabulated across treatment phases.

During both the first and second treatment phases, Jake produced on average 3.66 off topic comments per conversation. During the no treatment phase, Jake produced an average of 5.25 off-topic comments per conversation.

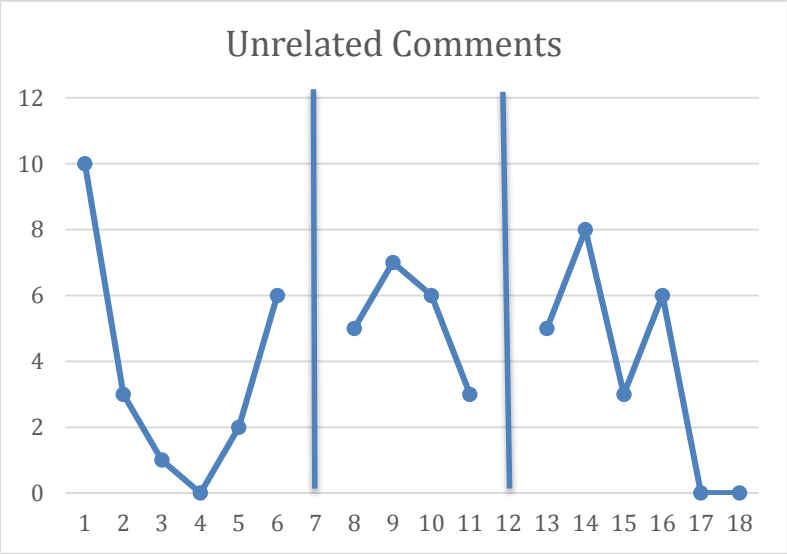

Figure 5: Unrelated comments produced by Jake

Jake average comment productions were totaled across treatment and no treatment phases. During the first treatment phase he produced an average of 31 comments per session. During the no treatment phase, Jake produced an average of 29

comments per session. During his final treatment phase, Jake produced an average of 41 comments per session.

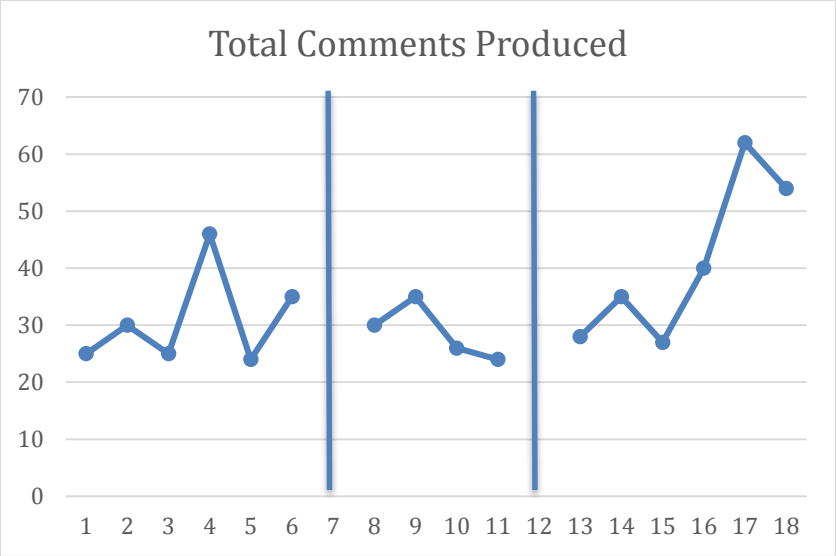

Figure 6: Total comments produced by Jake

Cole also showed frequency reduction in the rate of unrelated comments. Cole produced a mean of 4 off topic comments per session during the no treatment phase of treatment and reduced to an average of 1.8 off topic comments during the treatment phase.

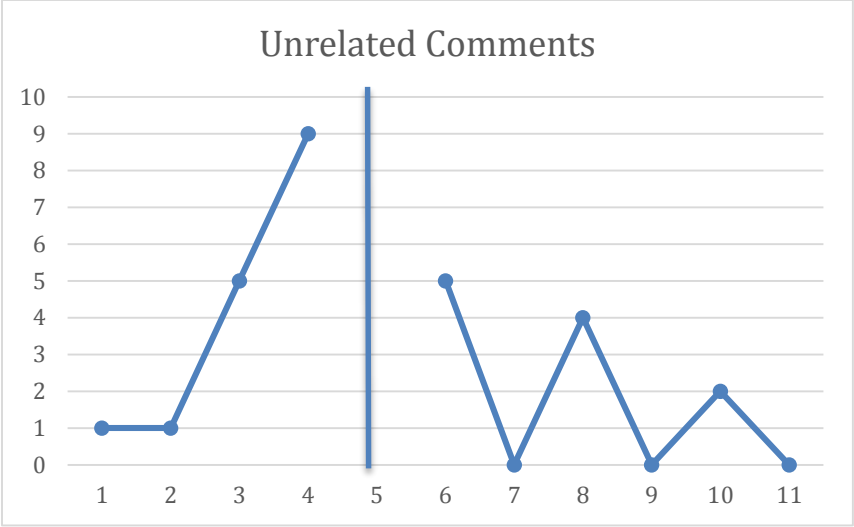

Figure 6: Unrelated comments produced by Cole

Cole ’s total comments were averaged and calculated across no treatment and treatment phases. During his no treatment phase Cole produced an average of 25 comments per session. During his treatment phase Cole produced an average of 44 comments during each session.

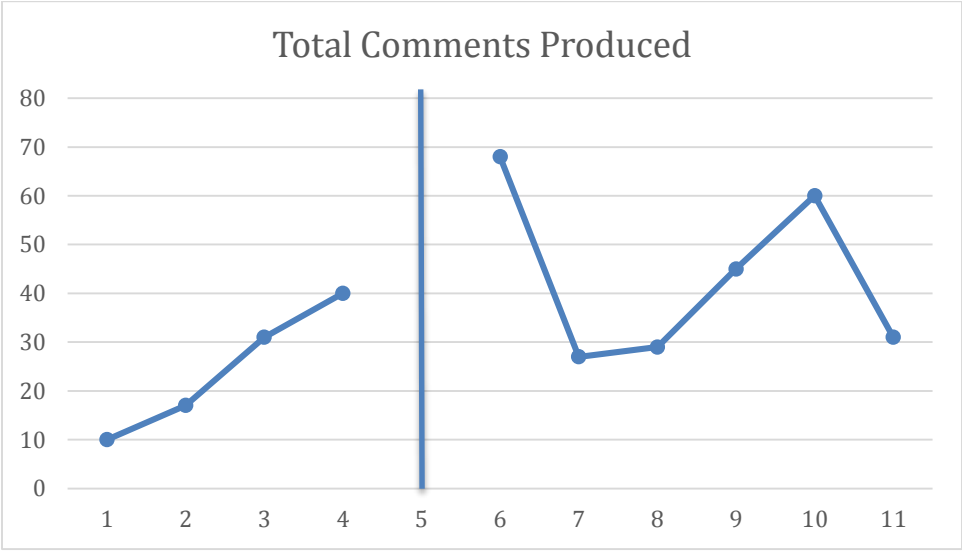

Figure 7: Total comments produced by Cole

PRODUCTION OF OFF TOPIC QUESTIONS

Research question 3 examined the frequency of off-topic questions produced during each 10-minute Skype session. During each Skype session both total number of questions asked and total number of off-topic questions asked were coded and calculated.

Jake produced an average of less than 1 off-topic question during his first treatment phase, an average of approximately 2 off-topic questions per session during the no treatment phase, and an average of less than 1 off-topic question per session during the second treatment phase. During the first treatment phase, Jake produced off-topic questions in (2 of 6) 33% of his sessions. During no treatment Jake produced off-topic questions in (3 out of 4) 75% of the sessions. During the second treatment phase, Jake produced off-topic questions in (1 out of 6) 16% of the sessions.

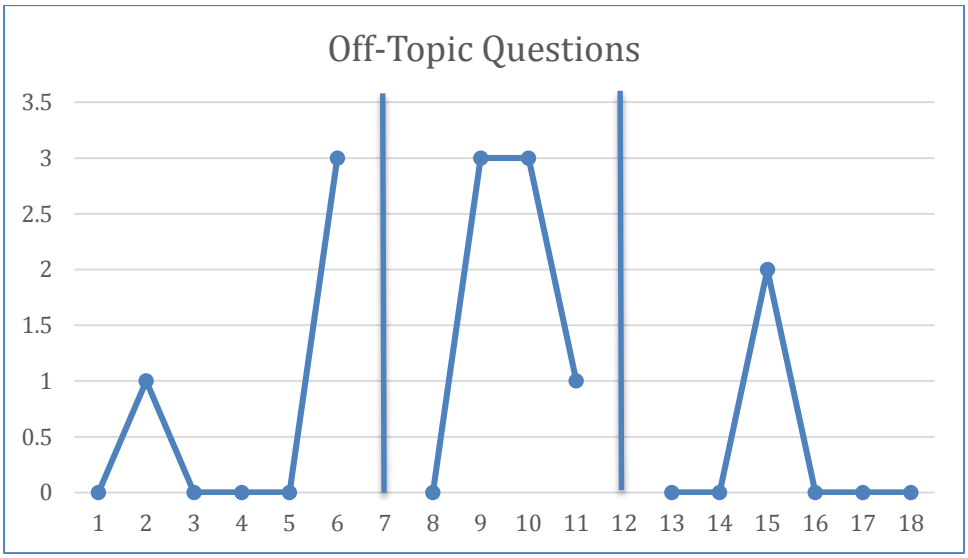

Figure 8: Unrelated questions produced by Jake

Jake produced an average of 16 questions per session during treatment phase one, 17 questions per session during the no treatment phase, and 17 questions per session during the second treatment phase. During the first treatment phase the lowest number of questions asked by Jake during one session was 6 and the highest number of questions asked was 25. During the no treatment period the lowest number of questions produced was 10 and the highest number of questions asked was 26. During the second treatment phase the lowest number of questions asked during a session was 9 and the highest number of questions asked during one session was 22.

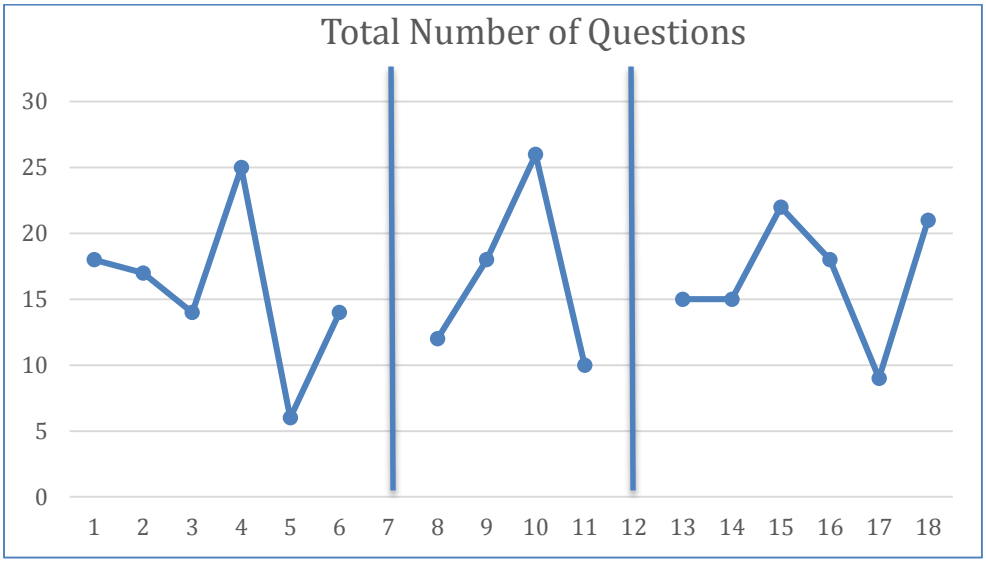

Figure 9: Total number of questions produced by Jake

Cole produced an average of 0.75 off-topic questions per session during the no treatment phase. During the treatment phase, Cole produced an average of 0.16 off-topic questions per session. During the no treatment phase he produced off-topic questions

during (2 of 4) 50% of his sessions. During the treatment phase, Cole produced off-topic questions during (1 of 6) 16% of his sessions.

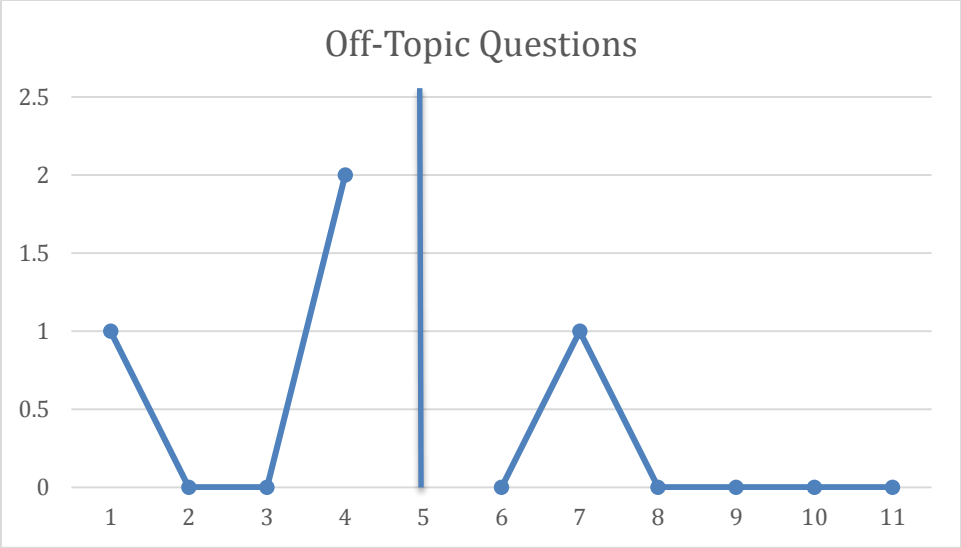

Figure 10: Unrelated questions produced by Cole

During the no treatment phase, Cole produced an average of 7 total questions per session. During the no treatment phase the lowest number of questions Cole produced during a session was 2 and the highest was 11. During the treatment phase, Cole produced an average of 7.2 total questions per sessions. During this phase the lowest number of questions the participant asked was 3 and the highest number of questions asked was 14 during one session.

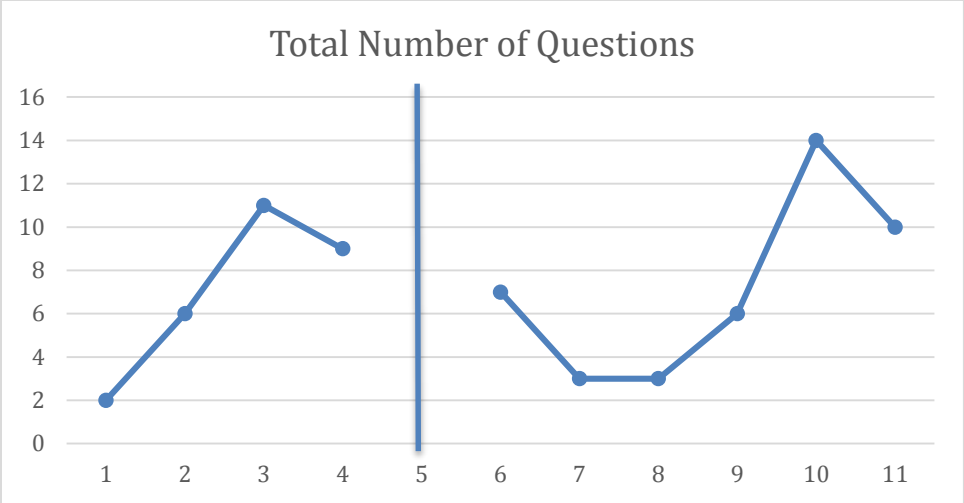

Figure 11: Total number of questions produced by Cole

Overall, Jake showed improvement in his ability to participate in conversation through his increased total utterance production and increased ratio of total utterances. Cole, while not as significant, also presented with an increase in total utterances and ratio of utterances while participating in the TALKS intervention. Jake presented with a reduced rate of off-topic comments during both treatment phases compared to the no treatment phase. Across treatment phases, Jake presented a significant increase in overall comment production. Cole showed a decrease in off-topic comment production and increased overall comment production during the treatment phase. Finally, Jake presented with a decrease in the frequency of off-topic question production. Jake did not show an increase or decrease in overall questions asked across treatment phases. Cole showed a decrease in off-topic question production but presented with consistent overall production of questions across treatment phases.

DISCUSSION

The current pilot study contributes to a small body of research examining the efficacy of group intervention for young adults diagnosed with ASD. The Training for Adults in Language and other Key Skills (TALKS) program offered at the University of Texas at Austin Speech and Hearing Center aims to provide social and language skills that aid individuals following graduation from high school or termination of vocational services. The purpose of this study was to examine the effects the TALKS program on each of the participant's production of total utterances, off-topic comments, and off-topic questions during short conversations.

RATIO OF TOTAL UTTERANCES

The first research question examined the ratio of total utterances produced by each participant. The ratio determines whether each participant is contributing to the conversation.

Jake presented with a steady increase in his production of total utterances across each treatment phase. Jake also showed improvement when examining the ratio of utterances produced during each session. This indicates that during conversation, Jake was able to contribute at a frequency that more closely matched his communication partners, further making him a better communication partner. Participation in conversation is key to forming relationships and successfully participating in educational and vocational settings. Jake showed an increase in his total comment production. During the first treatment phase, Jake produced an average of 31 comments per session. During the no treatment phase, Jake showed a decrease in average comment production of 28 comments per session. During the second treatment phase, Jake produced an average of 41 comments per session. Jake showed a positive increase in his average comment

production during both treatment phases but more significantly during the second treatment phase. The increase in comment production again suggests that Jake was contributing more to each conversation.

During the no treatment phase, Cole showed an increase in both the ratio of total utterances and total comments produced. This increase could be for several reasons; as each session progressed, Cole became more comfortable with both using Skype as a communication tool and the research assistant acting as the communication partner. An additional reason contributing to the positive increase during the no treatment phase is that each no treatment session provided Cole with additional conversation practice. During each session Cole was getting to know the communication partner and learning how to better participate in each conversation. While there were improvements documented during the no treatment phase for Cole, there were also improvements observed between the no treatment phase and the treatment phase. Cole's mean total utterances increased from 71 utterances per session during the no treatment phase to 83 utterances per session during the treatment phase. An increase in total utterances suggests that Cole was contributing more to each conversation during the treatment phase.

PRODUCTION OF OFF-TOPIC COMMENTS

While equal contribution in a conversation is important, staying on topic during a conversation is imperative for successful communication. The second research question of this pilot study examined the frequency of off-topic comments and total number of comments produced by each participant.

Jake showed a consistent and significant increase in the average number of comments produced during each session across both treatment phases. During his first treatment phase he produced an average of 31 comments per session, during his no

treatment phase he produced an average of 29 comments per session, and finally during his second treatment phase he produced an average of 41 comments per session. This is a significant increase when comparing the no treatment phase average with the second treatment phase average. Jake also showed a decrease in his off-topic comment production. During the no treatment phase, Jake produced an average of approximately 6 off-topic comments. However, during the second treatment phase he produced an average of 4 off-topic comments per session.

Cole also showed improvement in his ability to reduce the frequency of off-topic comments. During the no treatment phase, Cole produced an average of 4 off-topic comments. However, during the treatment phase he produced an average of 2 off-topic comments per session. When examining Cole's total comments produced, the researcher again noted an increase during the no treatment phase. This increase may be related to reasons previously mentioned regarding Cole's ability to become familiar and more comfortable with the communication partner and the application used to communicate. While an increase was noted during the no treatment phase, there was still an observable increase in total comments produced when comparing the totals of the no treatment phase and the treatment phase. During the no treatment phase Cole produced an average of 25 comments per session and during the treatment phase Cole produced an average of 41 comments per session.

PRODUCTION OF OFF TOPIC QUESTIONS

The third research question examined each participant's total production of off-topic questions. During each Skype session each participant's total number of questions asked and total number of off-topic questions asked were coded and tabulated.

Jake showed improvement in ability to decrease the presence of off-topic questions during each of the treatment phases. During his first treatment phase, Jake produced off-topic questions in 2 of 6 sessions, during the no treatment phase Jake produced off-topic questions in 3 of 4 sessions, and during his second treatment phase he produced off-topic questions in only 1 of 6 sessions. Overall, Jake reduced the presence and frequency of off-topic questions during each treatment phase. However, the data also indicates that Jake's average total number of questions asked during each treatment phase remained consistent across both treatment and no treatment phases. Jake produced and average of 16 questions during his first treatment phase and produced an average of approximately 17 questions during both the no treatment phase and the second treatment phase.

Cole showed improvement in his ability to reduce production of off-topic questions. During the no treatment phase he produced off-topic questions in 2 of 4 of the sessions. During the treatment phase, Cole only produced off-topic questions in 1 of 6 sessions. Cole produced an average of 7 total questions during both no treatment and treatment phases.

Cole currently attends school 5 days a week while Jake is not currently attending any academic classes. Cole's classroom environment may provide him with a greater number of communication opportunities to practice speech and language skills learned during the TALKS program. Cole is 13 year younger than Jake, which may contribute to his success during this research study. Jake's age and severity of diagnosis may play a role in his ability to improve social and language skills based on once weekly group intervention. Both participants had specific interests or topics they enjoyed discussing over the course of the study. Each participant produced greater amounts of comments and

total utterances during conversations that pertained to topics they found particularly interesting.

The goal of this pilot study was to determine if the TALKS program provided language and social communication effective intervention and if further research should be conducted. Overall, the data suggests that the TALKS program had a positive effect of the participants' production of total utterances during a conversation.

LIMITATIONS OF THE STUDY

There are limitations that should be considered when generalizing the results of the study. The research questions that guided this study were determined by analyzing different types of utterances produced during a 10 minute Skype conversation. In future studies researchers should consider the differences between a Skype conversation and a face-to-face conversation. If an individual is uncomfortable with technology or presents with limited verbal output a Skype conversation may not be able to adequately measure an individual's communication skills.

There were noted improvements in averages across no treatment and treatment phases for Cole. A limitation in examining averages may be that the participant may produce less than the presented amount of utterances during some conversations and an increased amount of utterances during other sessions.

CONCLUSION

The individuals showed improvements in their ability to equally participate in a short conversation and increase the total utterances produced during each conversation.

Both participants also reduced their average production of off topic questions and comments. Data suggests that the treatment did no have an effect on production of questions. While there are some limitations to this study, improvements were observed with both participants. Additional studies should be conducted to determine additional effects the TALKS program may have on participant's language and social skills. Future research should include a greater number of participants and use additional standardized examinations to access treatment effects in a more detailed, quantitate manner. Future research should include a full ABAB design in order to better look at a participant's performance across multiple treatment phases. Using Skype provided the researcher and the participants additional flexibility to schedule conversations and communicate from a variety of settings. In the future, researchers should incorporate both Skype and face-to-face conversations to determine if the effects seen from the TALKS program could be observed in multiple communication settings.

APPENDIX

UTTERANCES	Student total utterances	Partcipant total utterances	Student Question	Participant Question	Student Answer	Participant Answer	Student Comment	Participant Comment	Participant Unrelated Comment	Participant Unrelated Question	Perseverative Comment	Participant Interruptions	P Breaks Eye Contact	Unintelligible	Grammatically Inappropriate	Physical Gesture
TOTALS FROM BELOW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

REFERENCES

Anderson, D. K., Maye, M. P., & Lord, C. (2011). Changes in maladaptice behaviors from midchildhood to young adulthood in autism spectrum disorder. *American Association on Intellectual and Developmental Disabilities, 116(5),* 381-397.

Aud, S., KewalRamani, A., & Frohlich, L. (2011). America's youth: Transitions to adulthood. Washington, DC: Institute of Education Sciences.

Ballaban-Gil, K., Rapin, L., Tuchman, T., & Shinnar, S. (1996). Longitudinal examination of the behavioral, language, and social changes in a population of adolescent and young adults with autistic disorder. *Pediatric Neurology, 15,* 217-233.

Brown, R. I., Schalock, R. L., & Brown, I. (2009). Quality of life: its application to persons with intellectual disabilities and their families-introduction and overview. *Journal of Policy and Practice in Intellectual Disabilites, 6*, 2-6.

Carter, E., Harvey, M. N., Taylor, J. L., & Gotham, K. (2013). Connecting youth and young adults with autism spectrum disorders to community life. *Psychology In The Schools*, *50*(9), 888-898.

Chiang, H., Cheung, Y. K., Hickson, L., Xiang, R., & Tsai, L. Y. (2012). Predictive factors of participation in postsecondary education for high school leavers with autism. *Journal of Autism and Developmental Disorders. 42,* 685-696.

Farley, M. A., McMahon, W. M., Fombonne, E., Jenson, W. R., Miller, J., Gardner, M., et al. (2009). Twenty-year outcomes for individuals with autism and average or near- average cognitive abilities. *Autism Research, 2*, 109-118.

Gantman, A., Kapp, S. K., Orenski, K., & Laugeson, E. A. (2012). Social skills training

for young adults with high-functioning autism spectrum disorders: A randomized controlled pilot study. *Journal Of Autism & Developmental Disorders*, *42*(6), 1094-1103.

Hesselmark, E., Plenty, S., & Bejerot, S. (2014). Group cognitive behavioral therapy and group recreational activity for adults with autism spectrum disorders: A preliminary randomized controlled trial. Autism: *The International Journal Of Research & Practice*, *18*(6), 672-683.

Hillier, A, Fish, T., Cloppert, P., & Beversdorf, D. Q. (2007). Outcomes of a social and vocational skills support group for adolescents and young adults on the autism spectrum. *Focus on Autism and Other Developmental Disabilities, 22*(2), 107-115.

Howlin, P. (2000). Outcome in adult life for more able individuals with autism or Asperger syndrome. *Autism*, 4, 63-83.

Individuals With Disabilities Education Act Amendments of 2004, 11 Stat. 37 U.S.C Section 1401 (2004).

Koegel, R., & Frea, W. D. (1993). Treatment of social behavior in autism through the modificiation of pivotal social skills. *Journal of Applied Behavior Analysis,* 26, 369-377.

McCurdy, E. E., & Cole, C. L. (2014). Use of a peer support intervention for promoting academic engagement of students with autism in general education settings. *Journal of Developmental Disabilities, 44*, 883-893.

Mount, N., & Dillon, G. (2014). Parents' experiences of living with an adolescent diagnosed with an autism spectrum disorder. *Educational & Child Psychology*, *31*(4), 72-81.

Newman, L., Wagner, M.m Cameto, R., & Knokey, A. M. (2009). The post-high school outcomes of youth with disabilities up to 4 years after high school. Menlo Park, CA: SRI International.

Orsmond, G. I., Shattuck, P. T., Cooper, B. P., Sterzing, P. R., & Anderson K. A. (2013). Social participation among young adults with an autism spectrum disorder. *Journal of Autism and Developmental Disorder, 43*, 2710-2719.

Ozonoff, S., & Miller, J. N. (1995). Teaching theory of mind: a new approach to social skills training for individuals with autism. *Journal of Autism and Developmental Disorders, 25*(4), 415-433.

Reaven, J. S. (2012). Group cognitive behavior therapy for children with high-functioning autism spectrum disorders and anxiety: a randomized trial. *Journal Of Child Psychology & Psychiatry*, *53*(4), 410-419.

SRI International. (200). *National Longitudinal Transition Study II (NLTS2) Sampling Plan.* Menlo Park, CA

Taylor, J. & Seltzer, M. (2011). Employment and Post-Secondary Educational Activities for Young Adults with Autism Spectrum Disorders During the Transition to Adulthood. *Journal Of Autism & Developmental Disorders*, *41*(5), 566-574.

Verdugo, M. A., Navas, P., Gomez, L. E., & Schalock, R. L. (2012). The concept of quality of life and its role in enhancing human rights in the field of intellectual disability. *Journal of Intellectual Disability Research, 56*(11), 1036-1045.

Wentz, E., Nyden, A., & Krevers, B. (2012). Development of an internet-based support and coaching model for adolescents and young adults with ADHD and autism spectrum disorders: a pilot study. *European Child & Adolescent Psychiatry*, *21*(11), 611-622.

Whyte, E. M., Nelson, K. E., & Khan, K. S. (2013). Learning of idiomatic language expressions in a group intervention for children with autism. *Autism, 17*(4), 449-464.